ANNEX
BETWEEN
THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
AMES RESEARCH CENTER
AND AIRT, INC (D/B/A DRONERESPONDERS)
UNDER SPACE ACT UMBRELLA AGREEMENT
NO. 35945, SAA2-403675 (ANNEX NUMBER ONE)

ARTICLE 1. PURPOSE

This Annex shall be for the purpose of enabling NASA System-Wide Safety (SWS) researchers and DRONERESPONDERS to share critical safety flight and ground operations data, evaluate safety arguments and safety management systems for autonomy, and evaluate the risks of teleoperations processes in which one operator is responsible for multiple autonomous unmanned vehicles. DRONERESPONDERS will provide access to current data collected on flight operational waivers and will provide flight and ground operations data obtained from their day-to-day operations in the National Airspace System. NASA SWS will provide information and open-source tools for teleoperations, safety management systems, and risk analysis and prognostics.

In accordance with NASA ARC Intelligent System's IT Security Plan (CD-9999-M-ARC-3249), NASA will be using its open-sourced algorithms to understand the data. This collaborative effort will also include frequent interaction between subject matter experts at NASA and DRONERESPONDERS to adjust best practices as necessary to develop an effective and robust demonstration of highly-automated aerospace vehicle safety management systems.

The legal authority for this Annex, consistent with the Umbrella Agreement, is in accordance with the Space Act, Other Transactions Authority (OTA), 51 U.S.C. § 20113(e).

ARTICLE 2. RESPONSIBILITIES

A. NASA ARC will use reasonable efforts to:

Year One:

1. Review DRONERESPONDERS' database of operational waivers to identify patterns and common risks and hazards and proposed mitigations.
2. Present to DRONERESPONDERS' membership to identify likely collaborators for data collection and future technology infusion.
3. Review documentation on DRONERESPONDERS' training exercises to identify potential integration points for NASA-developed tools, services, functions, capabilities and processes.

Year Two:

1. Provide results from data analysis on the DRONERESPONDERS' database of operation waivers.

2. Apply knowledge gained during the review of DRONERESPONDERS' operations and safety processes to prepare In-Time Aviation Safety Management System (IASMS) implementations for use cases that can enable more rapid operational response for emergency operations.
3. Develop plans for potential future partnerships with additional DRONERESPONDER member collaborators that would leverage training exercises in the context of NASA's Safety Demonstrator Series.

Year Three:

1. Expand experiments and data gathering for all activities within the annex scope, including the safety of human-automation teaming, the risk level decrease associated with various In-time Aviation Safety Management System (IASMS) concepts, and the assurance of highly automated and autonomous systems within the context of emergency operations.
2. Facilitate coordination with industry standards committees and regulators on a.) operational requirements and safe and efficient human-automation interactions. b.) in-time safety approaches as they apply to emergency response operations, and c.) the assurance, operational approval, and eventual certification of increasingly autonomous systems within the context of emergency operations.

B. Partner will use reasonable efforts to:

Year One:

1. Provide data on aviation operational approval documents submitted for the purpose of emergency response.
2. Provide subject matter expertise on emergency response aviation operations.
3. Provide documentation on its training exercises for aviation within emergency response operations.

Year Two:

1. Gather safety metrics for emergency response, and work with NASA to provide experimental setups and simulations.
2. Work with NASA to incorporate NASA-developed processes for safety management into operations and report on effectiveness.
3. Provide subject matter expertise for how statistical evidence is used within emergency response operations to update risk assessments. Provide Partner-selected evidence from operations to standards committees and regulatory partners for the purpose of generating requirements and standards.

Year Three:

1. Continue to provide relevant data to NASA for all activities within the annex scope, including the safety of human-automation teaming, the risk level decrease associated with various IASMS concepts, and the assurance of highly automated and autonomous systems.

2. Continue to work with relevant standards committees and regulatory bodies to achieve consensus safety standards.

C. NASA ARC and Partner will use reasonable joint efforts to:

Year Two:

1. Define the appropriate evidence-gathering activities for all activities within the Annex scope, including the safety of human-automation teaming, the risk level decrease associated with various IASMS concepts, and the assurance of highly automated and autonomous systems.

Year Three:

1. Jointly publish appropriate and non-proprietary findings.

ARTICLE 3. SCHEDULE AND MILESTONES

The planned major milestones for the activities for this Annex defined in the "Responsibilities" Article are as follows:

Milestone	Estimated Completion Date
DRONERESPONDERS will provide data aviation operational approval documents submitted for the purpose of emergency response, subject matter expertise on emergency response aviation operations, and documentation on its training exercises for aviation within emergency response operations.	12 months from Effective Date
NASA will review DRONERESPONDERS' database of operational waivers to identify patterns and common risks and hazards and their proposed mitigations.	12 months from Effective Date
NASA will present to DRONERESPONDERS' membership to identify likely collaborators for data collection and future technology infusion.	12 months from Effective Date
NASA will review documentation on DRONERESPONDERS' training exercises to identify potential integration points for NASA-developed tools, services, functions, capabilities and processes.	12 months from Effective Date
DRONERESPONDERS will gather safety metrics for emergency response, and work with NASA to provide experimental setups and simulations.	24 months from Effective Date

DRONERESPONDERS will work with NASA to incorporate NASA-developed processes for safety management into operations and report on effectiveness.	24 months from Effective Date
DRONERESPONDERS will provide subject matter expertise for how statistical evidence is used within emergency response operations to update risk assessments and will provide evidence from operations to standards committees and regulatory partners for the purpose of generating requirements and standards.	24 months from Effective Date
NASA will provide results from data analysis on the DRONERESPONDERS' database of operation waivers.	24 months from Effective Date
NASA will apply knowledge gained during the review of DRONERESPONDERS' operations and safety processes to an overall In-Time Aviation Safety Management System (IASMS) that can enable more rapid operational response for emergency operations.	24 months from Effective Date
NASA will create partnership plans that leverage potential collaborators and training exercises in the context of NASA's Safety Demonstrator Series.	24 months from Effective Date
Together, NASA and DRONERESPONDERS will define the appropriate evidence-gathering activities for all activities within the Annex scope, including the safety of human-automation teaming, the risk level decrease associated with various IASMS concepts, and the assurance of highly automated and autonomous systems.	24 months from Effective Date
DRONERESPONDERS will continue to provide relevant data to NASA for all activities within the annex scope, including the safety of human-automation teaming, the risk level decrease associated with various IASMS concepts, and the assurance of highly automated and autonomous systems.	36 months from Effective Date
DRONERESPONDERS will continue to work with relevant standards committees and regulatory bodies to achieve consensus safety standards.	36 months from Effective Date

NASA will expand experiments and data gathering for all activities within the annex scope, including the safety of human-automation teaming, the risk level decrease associated with various In-time Aviation Safety Management System (IASMS) concepts, and the assurance of highly automated and autonomous systems within the context of emergency operations.	36 months from Effective Date
NASA will facilitate coordination with industry standards committees and regulators on a.) operational requirements and safe and efficient human-automation interactions. b.) in-time safety approaches as they apply to emergency response operations, and c.) the assurance, operational approval, and eventual certification of increasingly autonomous systems within the context of emergency operations.	36 months from Effective Date
Together, NASA and DRONERESPONDERS will jointly publish appropriate and non-proprietary findings.	36 months from Effective Date

ARTICLE 4. FINANCIAL OBLIGATIONS

There will be no transfer of funds between the Parties under this Agreement and each Party will fund its own participation. All activities under or pursuant to this Agreement are subject to the availability of funds, and no provision of this Agreement shall be interpreted to require obligation or payment of funds in violation of the Anti-Deficiency Act, (31 U.S.C. § 1341).

ARTICLE 5. INTELLECTUAL PROPERTY RIGHTS - DATA RIGHTS

A. Data produced under this Annex which is subject to paragraph C. of the Intellectual Property Rights - Data Rights Article of the Umbrella Agreement will be protected for the period of one year.

B. Under paragraph H. of the Intellectual Property Rights - Data Rights Article of the Umbrella Agreement, Disclosing Party provides the following Data to Receiving Party. The lists below may not be comprehensive, are subject to change, and do not supersede any restrictive notice on the Data provided.
    1. Background Data: The Disclosing Party's Background Data, if any, will be identified in a separate technical document.
    2. Third Party Proprietary Data: The Disclosing Party's Third Party Proprietary Data, if any, will be identified in a separate technical document.
    3. Controlled Government Data: The Disclosing Party's Controlled Government Data, if any, will be identified in a separate technical document.

4. The following software and related Data will be provided to Partner under a separate Software Usage Agreement: None

ARTICLE 6. TERM OF ANNEX

This Annex becomes effective upon the date of the last signature below ("Effective Date") and shall remain in effect until the completion of all obligations of both Parties hereto, or three years from the Effective Date, whichever comes first, unless such term exceeds the duration of the Umbrella Agreement. The term of this Annex shall not exceed the term of the Umbrella Agreement. The Annex automatically expires upon the expiration of the Umbrella Agreement.

ARTICLE 7. RIGHT TO TERMINATE

Either Party may unilaterally terminate this Annex by providing thirty (30) calendar days written notice to the other Party.

ARTICLE 8. POINTS OF CONTACT

The following personnel are designated as the Points of Contact between the Parties in the performance of this Annex.

Management Points of Contact

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Technical Points of Contact

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ARTICLE 9. MODIFICATIONS

Any modification to this Annex shall be executed, in writing, and signed by an authorized representative of NASA and the Partner. Modification of an Annex does not modify the terms of the Umbrella Agreement.

ARTICLE 10. SIGNATORY AUTHORITY

The signatories to this Annex covenant and warrant that they have authority to execute this Annex. By signing below, the undersigned agrees to the above terms and conditions.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION AMES RESEARCH CENTER	**AIRT, INC (D/B/A DRONERESPONDERS)**
BY: EUGENE TU Digitally signed by EUGENE TU Date: 2022.04.20 07:56:42 -07'00'	BY: Christopher Todd
Eugene Tu	Christopher Todd
Center Director	Executive Director
DATE:	DATE: 4/6/2022